



MI FluFocus

Influenza Surveillance and Avian Influenza Update

**Bureau of Epidemiology
Bureau of Laboratories**



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New updates in this issue:

- **Michigan:** MDCH BOL and sentinel laboratories reported no influenza positive tests for the past week.
 - **National:** Three influenza-associated pediatric deaths were reported to CDC during the past week.
 - **International:** Although pandemic influenza continues to be the predominant circulating influenza virus worldwide, seasonal influenza type B virus circulation continues to be predominant in East Asia.
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******2009 Influenza A (H1N1) virus Updates******

On April 2, MDCH updated guidance for healthcare providers, local health departments and laboratories regarding influenza surveillance, reporting and testing for the upcoming summer and fall. These documents are now available at the websites listed below.

Please continue to reference the MDCH influenza website at www.michigan.gov/flu for additional 2009 H1N1 information. Local health departments can find guidance documents in the MI-HAN document library. In addition, additional laboratory-specific information is located at the Bureau of Laboratories H1N1 page at http://www.michigan.gov/mdch/0,1607,7-132-2945_5103-213906--,00.html.

******Influenza Surveillance Reports******

Michigan Disease Surveillance System: MDSS data for the week ending April 17th showed a similar number of aggregate influenza reports and individual influenza and 2009 novel influenza cases when compared to the previous week. Aggregate and individual reports were lower than the levels reported during the same reporting period one year ago.

During April 11-17, 2010, 2446 cases of flu-like illness and confirmed and probable cases of seasonal and novel influenza were reported in Michigan. 2136 hospitalizations and 78 deaths associated with influenza have been reported since September 1, 2009. This report is updated every Tuesday by 5:00 pm and is accessible at "Current H1N1 Activity" on the website <http://www.michigan.gov/h1n1flu>.

Emergency Department Surveillance: Emergency department visits from constitutional and respiratory complaints decreased slightly from the levels seen during the previous week. Constitutional and respiratory complaints are similar to levels seen during the same reporting period in 2009. During the past week, there was one constitutional alert in the C Influenza Surveillance Region, and two respiratory alerts in the C Influenza Surveillance Region.

Over-the-Counter Product Surveillance: During the past week, OTC sales of chest rubs, adult cough/cold aids, pediatric electrolytes, and thermometers remained consistent with the previous week's levels. All indicators, with the exception of a slight increase in cough/cold sales, were consistent with levels seen during the identical reporting period in 2009.

Sentinel Provider Surveillance (as of April 22): Sentinel provider data for the week of April 11-17 was unavailable at the time of publication; it will be included in the next edition.

As part of pandemic influenza surveillance, CDC and MDCH highly encourage year-round participation from all sentinel providers. New practices are encouraged to join the sentinel surveillance program today! Contact Cristi Carlton at 517-335-9104 or CarltonC2@michigan.gov for more information.

Laboratory Surveillance (as of April 17): During April 11-17, MDCH Bureau of Laboratories identified no influenza isolates. For the 2009-2010 season (starting on October 4, 2009), MDCH BOL has identified 610 influenza isolates:

- 2009 Influenza A (H1N1): 609
- Influenza B: 1

For the week of April 4-10, 15 sentinel laboratories reported. Three labs reported sporadic influenza A positives (SE, SW), while 12 reported no influenza A positives (SE, SW, C, N). No labs reported any influenza B positives. During the week of April 11-17, 12 labs reported (SE, SW, C, N); no influenza A or B positives were noted. Sporadic RSV and parainfluenza positives were noted during these two weeks.

Michigan Influenza Antigenic Characterization (as of April 22): One 2009 H1N1 influenza A virus from Michigan has undergone further characterization at the CDC. This virus was characterized as A/California/07/2009 (H1N1)-like, which is the recommended strain for the H1 component of the 2010-11 Northern Hemisphere vaccine.

Michigan Influenza Antiviral Resistance Data (as of April 22): Results are currently not available for antiviral resistance at CDC for the 2009-2010 season.

Antiviral resistance testing takes months to complete and cannot be used to guide individual patient treatment. However, CDC has made recommendations regarding the use of antivirals for treatment and prophylaxis of influenza. The guidance is available at <http://www.cdc.gov/H1N1flu/recommendations.htm>.

Influenza-Associated Pediatric Mortality (as of April 22): Five 2009 H1N1 influenza-associated pediatric mortalities (SE(3), SW, N) have been reported to MDCH for the 2009-2010 influenza season.

***CDC has asked states for information on any pediatric death associated with influenza. This includes not only any pediatric death (<18 years) resulting from a compatible illness with laboratory confirmation of influenza, but also any unexplained pediatric death with evidence of an infectious process. Please immediately call MDCH to ensure proper specimens are obtained. View the complete MDCH protocol online at http://www.michigan.gov/documents/mdch/ME_pediatric_influenza_guidance_v2_214270_7.pdf.

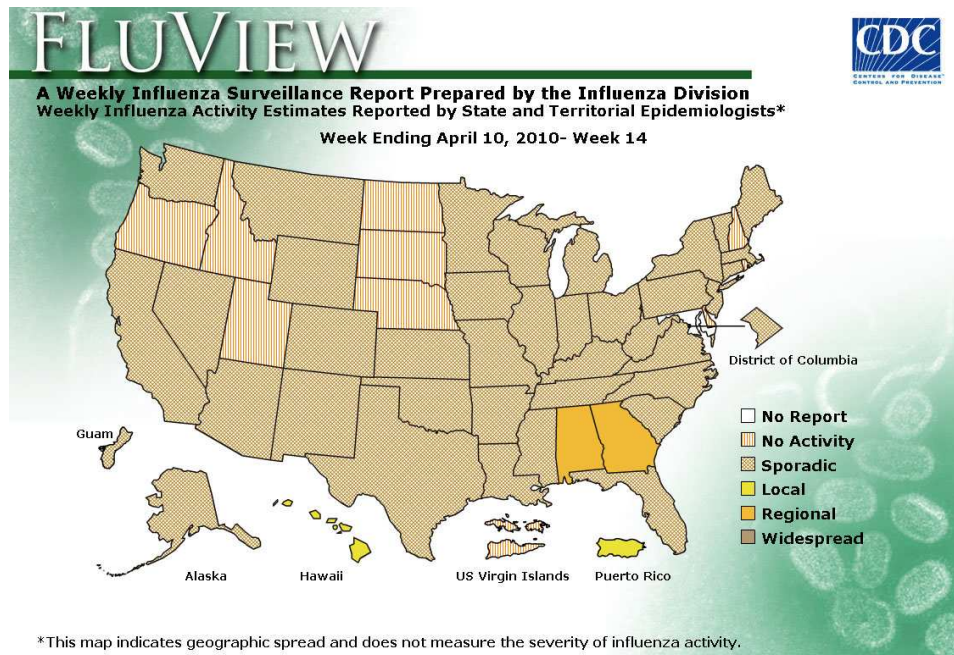
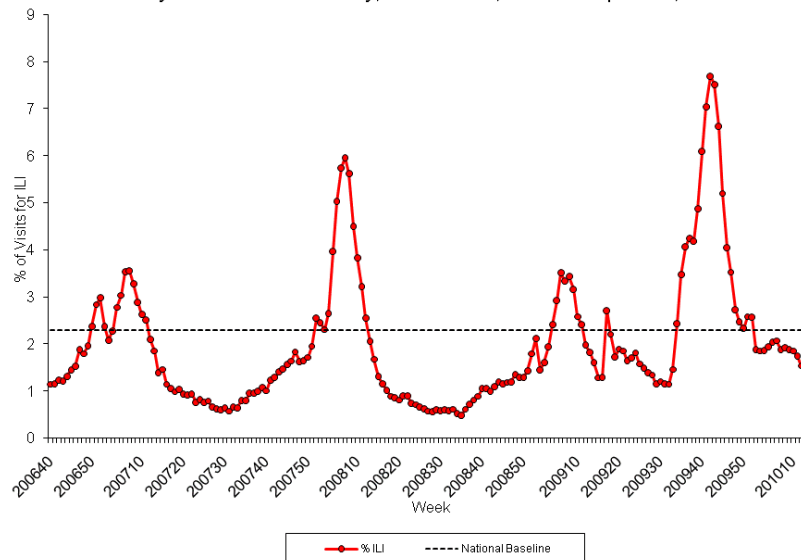
Influenza Congregate Settings Outbreaks (as of April 22): Seven congregate setting outbreaks with confirmatory novel influenza A H1N1 testing (2SE, 3 SW, 1C, 1N), and three outbreaks associated with positive influenza A tests (2C, 1N) have been reported to MDCH for the 2009-2010 influenza season. These are 8 school facilities and 2 long term care facilities. Human metapneumovirus was confirmed in one outbreak in a long term care facility (SW) in February.

During fall 2009, 567 influenza-related school and/or district closures in Michigan (Public Health Preparedness Region 1 - 55, Region 2N - 4, Region 2S - 8, Region 3 - 54, Region 5 - 153, Region 6 - 100, Region 7 - 109, Region 8 - 84) were reported.

National (CDC [edited], April 16): During week 14 (April 4-10, 2010), influenza activity decreased in the U.S. 52 (2.7%) specimens tested by U.S. World Health Organization (WHO) and National Respiratory and Enteric Virus Surveillance System (NREVSS) collaborating laboratories and reported to CDC/Influenza Division were positive for influenza. Among 34 subtyped influenza A viruses, 33 were 2009 influenza A (H1N1) and one was influenza A (H3). The proportion of deaths attributed to pneumonia and influenza (P&I) was below the epidemic threshold. Three influenza-associated pediatric deaths were reported. One was associated with 2009 influenza A (H1N1) virus infection, one was associated with an influenza A virus for which the subtype was undetermined, and one death was associated with a seasonal influenza A (H1) virus infection, but occurred during the 2008-09 season. The proportion of outpatient visits for influenza-like illness (ILI) was 0.9%, which is below the national baseline of 2.3%. All 10 regions reported ILI below region-specific baseline levels. No states reported widespread influenza activity. Two states reported regional influenza activity. Puerto Rico and one state reported local influenza activity. The District of Columbia, Guam and 37 states reported sporadic influenza activity. The U.S. Virgin Islands and nine states reported no influenza activity, and one state did not report.

To access the entire CDC weekly surveillance report, visit <http://www.cdc.gov/flu/weekly/fluactivity.htm>

Percentage of Visits for Influenza-like Illness (ILI) Reported by the U.S. Outpatient Influenza-like Illness Surveillance Network (ILINet), Weekly National Summary, October 1, 2006 – April 10, 2010



From <http://www.cdc.gov/h1n1flu/updates/us/#totalcases>:

U.S. Influenza and Pneumonia-Associated Hospitalizations and Deaths from Aug 30, 2009–April 3, 2010

Cases Defined by
Influenza Laboratory-Tests**

Hospitalizations
41,821

Deaths
2,117

**States report weekly to CDC either 1) laboratory-confirmed influenza hospitalizations and deaths or 2) pneumonia and influenza syndrome-based cases of hospitalization and death resulting from all types or subtypes of influenza. Although only the laboratory confirmed cases are included in this report, CDC continues to analyze data both from laboratory confirmed and syndromic hospitalizations and deaths.

International (WHO pandemic update 96 [edited], April 16): The most active areas of pandemic influenza virus transmission currently are in parts of the tropical zones of the Americas, West Africa, Eastern Africa and South East Asia. Although pandemic influenza continues to be the predominant circulating influenza virus worldwide, seasonal influenza type B virus circulation continues to be predominant in East Asia, and is being detected across other parts of Asia, and Europe at low levels. Sporadic detections of seasonal influenza H3N2 viruses have been reported across Asia, Eastern Europe and Eastern Africa most notably in recent weeks in Indonesia and Tanzania. Few seasonal H1N1 viruses were reported in the Russian Federation and Northern China in the last week.

In East Asia, pandemic influenza activity continued to decline and is now at very low levels. The predominant virus associated with influenza-like-illness in the area is now influenza type B viruses, which continue to circulate in China, Mongolia, and Republic of Korea. The Republic of Korea reports an increasing trend of respiratory disease activity associated with detections of influenza type B viruses and small numbers of pandemic H1N1. In China, outbreaks of acute respiratory infections associated with B virus detections are reported but none due to pandemic H1N1. The overall level of respiratory disease activity is similar to the level observed during the same period of 2007-2008 and 2008-2009 seasons. Small numbers of seasonal H3N2 and sporadic seasonal H1N1 viruses were detected in Northern China. In Mongolia, rates of influenza-like illness (ILI) continue to decline and are associated with influenza type B only.

In South and Southeast Asia, the most active areas of influenza transmission are Thailand and Singapore, where pandemic H1N1 is the dominant influenza virus, with co-circulation at lower levels of influenza type B and H3N2. Overall, the intensity of transmission is relatively low. In Thailand, respiratory disease activity has decreased since the previous week. Four percent of sentinel respiratory samples from ILI patients and 2.6% of sentinel respiratory samples from hospitalized patients with pneumonia were found to be positive for pandemic H1N1. Malaysia continues to report occasional outbreaks of respiratory disease in three states, Johor, Pahang, and Melaka. Only Melaka state has reported pandemic H1N1 laboratory confirmed cases, with 4 cases treated in the Intensive Care Unit (ICU). In India overall pandemic H1N1 activity is very low in most states, although in western India pandemic H1N1 cases continue to be reported in low numbers.

In Europe, pandemic influenza activity has continued to decrease in recent weeks and is at very low intensity in all countries. The overall proportion of sentinel respiratory samples testing positive for influenza remained low (5.4%), and the number of influenza type B virus detections exceeded that of influenza A. In Italy, 50% (7/14) of sentinel respiratory samples tested positive for influenza, all of which were seasonal influenza type B viruses.

In the northern temperate zones of the Americas, overall pandemic influenza transmission remained low as pandemic influenza H1N1 virus continues to circulate at very low levels in some areas. In temperate countries of the southern hemisphere, overall respiratory disease activity remained low.

In tropical zone of the Americas, limited data suggests that overall influenza activity remains low with localized areas of active transmission in a number of countries. In Cuba, a slight increase of confirmed cases of pandemic virus was reported during the most recent reporting week. In Mexico, available data suggests that localized active transmission of pandemic influenza virus continues to occur around Mexico City but is very low nationally. In Peru, the number of pneumonia cases has increased over the last 2 weeks, especially in children less than 5 years of age, however there is no virological information available to indicate the cause of these cases. The lack of an associated increase in other age groups may indicate a cause other than influenza. Increased levels of ILI have also been reported across much of Brazil over the previous two weeks particularly in northern Brazil.

In North Africa limited available data suggests that respiratory disease activity remained low. In sub-Saharan Africa, West Africa continues to see community transmission of pandemic influenza virus with Ghana currently being the primary focus of transmission (45% of all clinical specimens tested were positive for pandemic influenza) but smaller numbers of cases were also seen in Senegal and Niger. Pandemic influenza virus transmission appears to have peaked in Senegal approximately one month ago. Guinea has now reported their first cases of pandemic H1N1. In East Africa, cases of pandemic influenza H1N1 continue to be detected in Rwanda, though in declining numbers. Small numbers of seasonal influenza H3N2 and influenza type B viruses were detected during the last week in Rwanda, Kenya and South Africa. Notably, Tanzania has also recently reported significant transmission of seasonal influenza H3N2. No increases in respiratory disease activity or pandemic influenza have yet been noted in South Africa.

In the South Pacific, Vanuatu and Nauru reported an increasing trend of respiratory diseases activity for this week, but this trend was not associated with laboratory confirmed detections of pandemic H1N1 virus.

In other temperate countries out of the southern hemisphere, Australia and New Zealand, influenza activity continues to be low, with mostly detections of pandemic H1N1 and sporadic seasonal influenza viruses.

MDCH reported **SPORADIC INFLUENZA ACTIVITY** to the CDC for the week ending April 17, 2010.

For those interested in additional influenza vaccination and education information, the MDCH *FluBytes* is available at http://www.michigan.gov/mdch/0,1607,7-132-2940_2955_22779_40563-125027--,00.html.

Novel Influenza Activity and Other News

WHO Pandemic Phase: Phase 6 – characterized by increased and sustained transmission in the general population. Human to human transmission of an animal or human-animal influenza reassortant virus has caused sustained community level outbreaks in at least two WHO regions.

International, Human (WHO, April 21): The [Vietnam] Ministry of Health has reported two new confirmed human cases of A(H5N1) avian influenza infection on 6 and 9 April 2010. These cases were confirmed at the National Institute for Hygiene and Epidemiology.

The first case is a 22 year old male from Nhu Co commune, Bac Kan province. He developed symptoms on the 28 of March 2010 and was transferred to the National Hospital of Tropical Diseases in severe condition. Confirmatory test results for influenza A (H5) were obtained on 3 April.

The initial epidemiological investigations show that there were sick/dead poultry at the patient's home and in the surrounding areas.

The second case is a 2 year old girl residing in Cho Moi district, Bac Kan province. She developed symptoms on 2 April 2010. On 4 April, she was transferred to Cho Moi District Hospital for treatment where she is in a stable condition. Confirmatory test results for influenza A (H5) were obtained on 7 April.

The initial epidemiological investigations show that there were sick/dead poultry at the patient's home and in the surrounding areas. The patient's family slaughtered the sick poultry to eat.

There is no epidemiological link between these two cases that would indicate human-to-human transmission.

Of the 119 cases confirmed to date in Viet Nam, 59 have been fatal.

International, Swine (OIE [edited], April 19): Pandemic influenza A H1N1; Country: Korea (Rep. of)
Date of first confirmation of the event: 12/04/2010; Date of Start of Event: 12/04/2010
Date of report: 19/04/2010; Date Submitted To OIE: 20/04/2010
Number Of Reported Outbreaks: Submitted= 2

Outbreak 1:

Province: KYONGGI-DO; District: Icheon-city; Location: Seolsung-myun
Species: Swine; Susceptible: 1300; Cases: 18; Deaths: 0; Destroyed: 0; Slaughtered: 0

Outbreak 2:

Province: KYONGGI-DO; District: Icheon-city; Location: Seolsung-myun
Species: Swine; Susceptible: 2500; Cases: 18; Deaths: 0; Destroyed: 0; Slaughtered: 0

Epidemiological comments: During monitoring tests for influenza A H1N1 on pig farms across the country, these two farms were found to be positive.

Source of the outbreak(s) or origin of infection: Unknown or inconclusive

Control Measures Applied: Movement control inside the country, Disinfection of infected premises

To be applied: No Planned Control Measures

Animals treated: No

Vaccination Prohibited: Yes

International, Equine (Journal of Biomedical Science 2010, 17:25 [edited], April 14): Isolation and characterization of highly pathogenic avian influenza virus subtype H5N1 from donkeys - Provisional abstract

Highly pathogenic H5N1 is a major avian pathogen that crosses species barriers and seriously affects humans as well as some mammals. It mutates in an intensified manner and is considered a potential candidate for the possible next pandemic with all the catastrophic consequences.

Methods: Nasal swabs were collected from donkeys suffering from respiratory distress. The virus was isolated from the pooled nasal swabs in specific pathogen free embryonated chicken eggs (SPF-ECE). Reverse transcriptase polymerase chain reaction (RT-PCR) and sequencing of both haemagglutinin and neuraminidase were performed. H5 seroconversion was screened using haemagglutination inhibition (HI) assay on 105 donkey serum samples.

Results: We demonstrated that H5N1 jumped from poultry to another mammalian host, donkeys. Phylogenetic analysis showed that the virus clustered within the lineage of H5N1 from Egypt closely related to 2009 isolates. It harboured few genetic changes compared to the closely related viruses from avian and humans. The neuraminidase lacks oseltamivir resistant mutations. Interestingly, HI screening for antibodies to H5 haemagglutinins in donkeys revealed a high exposure rate.

Conclusions: These findings extend the host range of the H5N1 influenza virus, possess implications for influenza virus epidemiology, and highlight the need for the systematic surveillance of H5N1 in animals in the vicinity of backyard poultry units, especially in endemic areas.

Michigan Wild Bird Surveillance (USDA, as of April 22): For the 2009 testing season (April 1, 2009-March 31, 2010), HPAI subtype H5N1 has not been recovered from any of the 111 Michigan samples tested to date, including 58 live wild birds, 39 hunter-killed birds and 14 morbidity/mortality specimens. H5N1 HPAI has not been recovered from 19,448 samples tested nationwide. For more information, visit the National HPAI Early Detection Data System at <http://wildlifedisease.nbio.gov/ai/>.

To learn about avian influenza surveillance in Michigan wild birds or to report dead waterfowl, go to Michigan's Emerging Disease website at <http://www.michigan.gov/emergingdiseases>.

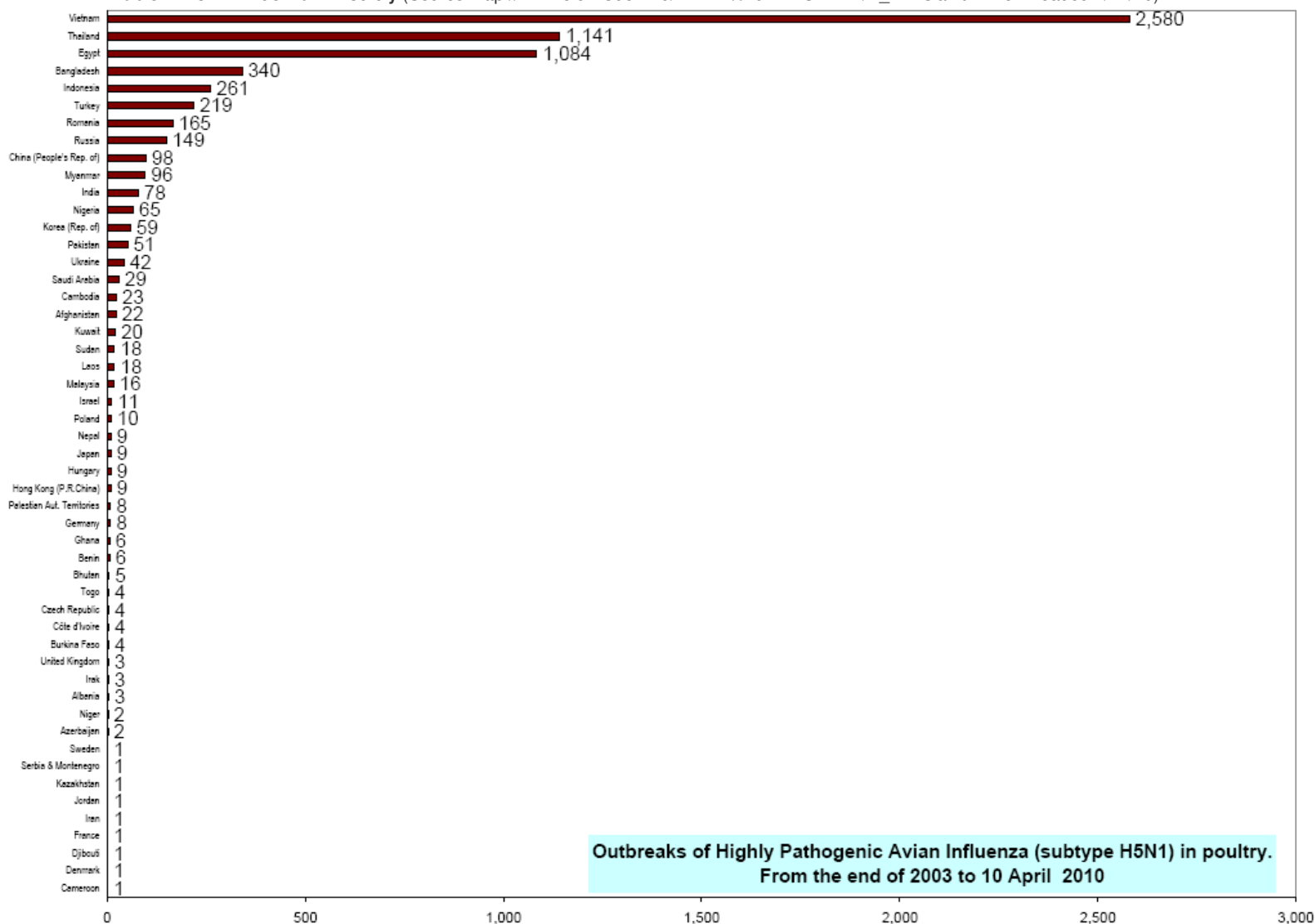
Please contact Susan Peters at PetersS1@Michigan.gov with any questions regarding this newsletter or to be added to the weekly electronic mailing list.

Contributors

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Table 1. H5N1 Influenza in Poultry (Source: http://www.oie.int/downld/AVIAN%20INFLUENZA/A_AI-Asia.htm Downloaded 4/12/10)



**Outbreaks of Highly Pathogenic Avian Influenza (subtype H5N1) in poultry.
From the end of 2003 to 10 April 2010**

Table 2. H5N1 Influenza in Humans - Cases up to April 21, 2010. http://www.who.int/csr/disease/avian_influenza/country/cases_table_2010_04_21/en/index.html. Downloaded 4/22/2010. Cumulative number of lab-confirmed cases reported to WHO. Total cases includes deaths.

Country	2003		2004		2005		2006		2007		2008		2009		2010		Total	
	cases	deaths	cases	deaths	cases	deaths	cases	deaths	cases	deaths	cases	deaths	cases	deaths	cases	deaths	cases	deaths
Azerbaijan	0	0	0	0	0	0	8	5	0	0	0	0	0	0	0	0	8	5
Bangladesh	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0
Cambodia	0	0	0	0	4	4	2	2	1	1	1	0	1	0	0	0	9	7
China	1	1	0	0	8	5	13	8	5	3	4	4	7	4	0	0	38	25
Djibouti	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0
Egypt	0	0	0	0	0	0	18	10	25	9	8	4	39	4	19	7	109	34
Indonesia	0	0	0	0	20	13	55	45	42	37	24	20	21	19	1	1	163	135
Iraq	0	0	0	0	0	0	3	2	0	0	0	0	0	0	0	0	3	2
Lao People's Democratic Republic	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0	0	2	2
Myanmar	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0
Nigeria	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	1	1
Pakistan	0	0	0	0	0	0	0	0	3	1	0	0	0	0	0	0	3	1
Thailand	0	0	17	12	5	2	3	3	0	0	0	0	0	0	0	0	25	17
Turkey	0	0	0	0	0	0	12	4	0	0	0	0	0	0	0	0	12	4
Viet Nam	3	3	29	20	61	19	0	0	8	5	6	5	5	5	7	2	119	59
Total	4	4	46	32	98	43	115	79	88	59	44	33	73	32	27	10	495	292